THE UNIVERSITY OF MANITOBA
DEPARTMENT OF BIOCHEMISTRY

MEDICAL COLLEGE
BANNATYNE AND EMILY,
WINNIPEG 3, CANADA

October 17, 1961.

Dr. P. Berg,
Department of Biochemistry,
Stanford University School of Medicine,
Palo Alto, California.

Dear Dr. Berg,

I would greatly appreciate having one copy each of your four recent papers entitled "The Enzymic Synthesis of Amino Acyl Derivatives of Ribonucleic Acid," J. Biol. Chem. 236, 1726, 1735, 1741, 1748 (1961).

In the past year we have been measuring α-glutamyl RNA, glutaminyl RNA and glycyl RNA synthetase activities in rat liver fractions by following the rate of labelling of SRNA in heated rat liver "pH5 enzymes" on addition of very small amounts of partially purified fractions in the presence of excesses of ATP and the appropriate C^{14}-amino acid. Under these conditions the rate of labelling of SRNA is proportional to enzyme concentration as you have reported in Paper I. These activities have proven, up to now, somewhat refractory to measurement by the usual hydroxamate and ATP-PP^{32} exchange tests, although in partially purified preparations we have obtained both glutamate— and glutamine—dependent ATP-PP^{32} exchanges.

One thing that has been essential for us in the measurement of the α-glutamyl RNA and glutaminyl RNA synthetase activities. That has been elimination of C^{14}-glutamate $\rightleftharpoons$ C^{14}-glutamine interconversion by the addition of a glutamine synthetase inhibitor, methionine sulfoximine. If this is not added then both α-glutamyl— and glutaminyl—RNA's form in the "cruder" preparations as identified by hydrolysis and ammonolysis of the labelled SRNA. This brings me to a question concerning your experiments that indicated that the polynucleotide chains specific for accepting L-methionine are heterogeneous. Is it not possible that the E. coli methionyl RNA synthetase preparation contains enzymes which convert methionine to some other amino acid (e.g. cysteine) and catalyze the formation of another amino acyl RNA? Have you identified the product(s) formed by both the E. coli and yeast methionyl RNA synthetase preparations (separately and mixed)?

Yours sincerely,

Murray J. Fraser.

Murray J. Fraser, Ph.D.,
Assistant Professor of Biochemistry.

MJF/SJ

Dear Dr Fraser,
Enclosed are the reprints you requested. I was happy to hear of your results with glutamyl-, glutaminyl- & glycyl RNA fractions. Your suggestion as to an alternative interpretation of our methionyl data is a good one. I don't think we can eliminate by any of our data although I'm somewhat skeptical that our purified enzymes will convert

nothing to cysteine without any additions, even if all the enzymes necessary for the conversion were present.

Sincerely,

RC